

Commonwealth of Kentucky
Division for Air Quality
REVISED PERMIT STATEMENT OF BASIS

Final
Conditional Major/Operating
Permit: F-08-002
Sara Lee Foods U.S- Claryville Facility
Alexandria, Kentucky 41001
May 9, 2008
Esmail Hassanpour, Reviewer
SOURCE ID: 21-037-00074
AGENCY INTEREST: 586
ACTIVITY: APE20070001

SOURCE DESCRIPTION:

The Sara Lee Foods U.S- Claryville facility (Sara Lee) applied to the Kentucky Division for Air Quality on December 15, 2007, to renew their current permit, F-03-002 R5, in Alexandria, KY. Sara Lee is proposing to move the Liquid Smoke Units from the insignificant activities list in Section C of the permit to Section B based on updated potential emission calculations which demonstrate that the units no longer qualify as insignificant activities under 401 KAR 52:030, Section 6. Additionally, Sara Lee is removing a 9.5 MMBtu/hr boiler from the insignificant activities list, as this unit has been removed from the facility. Finally, Sara Lee is increasing the maximum hourly processing rates for emission unit 04 (Continuous Smokehouse 1) from 6,000 lb/hr to 7,200lb/hr; and for emission units 20 and 21 (Protecon Units 1 and 2) from 4,740 lb/hr to 5,760 lb/hr because of increases in operational efficiency.

Sara Lee is a meat packing and meat products manufacturing facility. Raw meats are stuffed and loaded into casings upstream of the cooking and smoking operations at the plant. The products are then loaded onto racks for processing in one of the batch or continuous smokehouses or the Protecon units.

The meat smokehouses are used to add flavor, color, and aroma to meat products. The production of smoked meats typically involves four operating steps (1) tempering and drying, (2) smoking, (3) cooking, and (4) chilling. The objective of the tempering step is to create uniformity in the surface conditions of the product before it is cooked and smoked. Tempering can be achieved by either showering the product with water or by introducing a high humidity air stream into the smokehouse as a first processing step. The objective of the drying step is to uniformly dry the product surface to allow for uniform smoke absorption and the development of the desired smoked color during the smoking step. The objective of the smoking step is to impart the desired flavor, color and aroma to the meat, which can either be accomplished through the application of natural wood

smoke or liquid smoke. The cooking step sets the color applied by the smoke and brings the core temperature of the product to the target desired by the operator. Finally, the smoked and cooked products are rapidly cooled (either directly in the smokehouse or in another processing area) for downstream packaging and shipment to end customers.

Sara Lee operates twelve (12) batch smokehouses. Six houses are currently dedicated to the production of hot dogs (Emission Units: 05-09 and 18) and are equipped with natural gas burners with a rated heat input capacity of 2.75 MMBtu/hr. The remaining six houses (Emission Units: 10-11 and 13-16) are currently dedicated to deli meat production and are equipped with natural gas fired burners with a heat input capacity of 3.85 MMBtu/hr each. In the batch smokehouses, uncooked meat products are loaded into the cooking chamber using specially designed racks known as “trees”. The temperature and humidity within the chamber are controlled using heat generated by the natural gas fired burners and steam produced by the five (5) natural gas fired boilers at the facility [three (3) Cleaver Brooks Boilers (Emission Units: 01-03), 8.57 MMBtu/hr each and two (2) Cleaver Brooks boilers (Emission Units: 22 and 23) 12.56 MMBtu/hr each. Both natural and liquid smoke can be injected into the batch smokehouses. Natural wood smoke is produced by pyrolyzing wood chips or sawdust in the smoke generator associated with each smokehouse. Liquid smoke is injected via atomizing spray nozzles located within the smokehouse. A liquid smoke drenching cabinet is also used to apply liquid smoke to product before it is loaded into the batch houses. Once the product has been smoked and cooked, it is sent to a batch brine chiller for cooling. Emissions from each batch smokehouse and each boiler are routed through dedicated stacks directly to atmosphere.

The continuous houses are currently dedicated to the production of hot dogs and have natural gas fired burners with a heat input capacity of 1.65 MMBtu/hr. Products are loaded into the continuous smokehouses on sticks which connect to a conveyor system that transports the products through the liquid smoke drenching, cooking, and cooling zones of the house. Liquid smoke is showered over the product in the drenching zone. The cooking portion of the continuous houses is broken up into three smaller zones each of which have a distinct smoke density, temperature, and humidity profile. Just as for the batch houses, natural wood smoke is produced by smoke generators and is injected into the first two cooking zones of the house. Heat generated by the natural gas fired burners and steam generated by the boilers on-site are used to control the humidity and temperature within the cooking zones. The cooling zone is a brine cooled chamber that rapidly cools the product before it exits the house. Emissions from the drenching zone and each of the three cooking zones of the continuous houses are routed through dedicated stacks directly to atmosphere [i.e., one (1) emission point for the drenching activities associated with each continuous house (Emissions Unit 25 and 26) three (3) emission points for each continuous house (Emissions Unit 04, and 12)].

The end products from the batch and continuous houses and the Protecons are then packaged and stored in a clean room for eventual shipment offsite. The humidity and purity of the atmosphere within the clean room are controlled using natural gas fired make-up air units (Insignificant Activities 4, 5, 7, 8 and 12), a natural gas fired dehumidification unit (Insignificant Activities 9), and a natural gas fired purge unit (Insignificant Activities 10).

APPLICABLE REGULATIONS AND EMISSION UNITS:

401 KAR 59:010, new process operations, applicable to each affected facility or source, associated with a process operation commenced on or after July 2, 1975.

401 KAR 59:015, New indirect heat exchangers applicable to an emission unit with a capacity less than 250 MMBtu/hr and commenced on or after April 9, 1972.

401 KAR 60:005, incorporating by reference 40 CFR 60, Subpart Dc, Standards of performance for small industrial-commercial-institutional steam generating units, for units less than or equal to 100 MMBtu/hour but greater than or equal to 10 MMBtu/hr commenced after June 9, 1989.

EMISSION UNITS 01-03:

Pursuant to 401 KAR 59:015, Section 4(1)(c), particulate emissions shall not exceed 0.45 lb/MMBtu based on a three-hour average for each boiler.

Pursuant to 401 KAR 59:015, Section 4(2)(b), opacity shall not exceed twenty percent (20) except that a maximum of forty percent (40) opacity shall be permissible for not more than six consecutive minutes in any sixty consecutive minutes during cleaning the fire box or blowing soot.

Pursuant to 401 KAR 59:015, Section 4(2)(c), emissions shall not exceed 20% opacity based on a six-minute average, except for emissions from an indirect heat exchanger during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 59:015, Section 5(1)(c), the sulfur dioxide emissions shall not exceed 2.06 lb/MMBtu, each, based on a twenty-four-hour average.

EMISSION UNITS 04 and 12:

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions shall not exceed 7.94 lb/hr and 7.09 lb/hr based on a three-hour average for Continuous Smokehouses 1 and 2 .

Pursuant to 401 KAR 59:010, Section 3(1)(a), opacity shall not equal or exceed twenty (20) percent opacity based on a six-minute average.

In determining compliance with the particulate emission limits, based on a three-hour average for each oven, a particulate emission factor of wood from most recent AP-42 and a maximum wood usage per oven of 90 lbs/hr shall be used.

EMISSIONS UNIT 05-09, 10, 11, 13-16, and 18:

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions shall not exceed 4.62 lb/hr based on a three-hour average for each oven.

Pursuant to 401 KAR 59:010, Section 3(1)(a), opacity shall not equal or exceed twenty (20) percent opacity based on a six-minute average.

In determining compliance with the particulate emission limit of 4.62 lb/hr, based on three-hour average for each oven, a particulate emission factor of wood from most recent AP-42 and a maximum wood usage per oven of 60 lbs/hr shall be used.

EMISSION UNITS 20 – 21:

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions shall not exceed 6.92 lb/hr based on a three-hour average for each unit.

Pursuant to 401 KAR 59:010, Section 3(1)(a), opacity shall not equal or exceed twenty (20) percent opacity based on a six-minute average.

EMISSION UNITS 22 – 23:

Pursuant to 401 KAR 59:015, Section 4(1), particulate emissions shall not exceed 0.38 lb/MMBtu based on a three-hour average for each boiler.

Pursuant to 401 KAR 59:015, Section 4(2)(b), opacity shall not exceed twenty percent (20) except that a maximum of forty percent (40) opacity shall be permissible for not more than six consecutive minutes in any sixty consecutive minutes during cleaning the fire box or blowing soot.

Pursuant to 401 KAR 59:015, Section 4(2)(c), emissions shall not exceed 20% opacity based on a six-minute average, except for emissions from an indirect heat exchanger during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

EMISSION UNIT 24:

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions shall not exceed 2.34 lb/hr based on a three-hour average for each unit.

Pursuant to 401 KAR 59:010, Section 3(1)(a), opacity shall not equal or exceed twenty (20) percent opacity based on a six-minute average

EMISSION UNIT 25:

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions shall not exceed 7.92 lb/hr based on a three-hour average for each units.

Pursuant to 401 KAR 59:010, Section 3(1)(a), opacity shall not equal or exceed twenty (20) percent opacity based on a six-minute average

EMISSION UNIT 26:

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions shall not exceed 7.09 lb/hr based on a three-hour average for each units.

Pursuant to 401 KAR 59:010, Section 3(1)(a), opacity shall not equal or exceed twenty (20) percent opacity based on a six-minute average.

EMISSION AND OPERATING CAPS DESCRIPTION:

The source has agreed to take federally enforceable limitations on the ovens and shall be limited to emissions less than 90 tons per year of any regulated air pollutant, to preclude the applicability of 401 KAR 52:020 To preclude the applicability of 401 KAR 52:020, total amount of wood or sawdust for emission units 04 and 12 shall not exceed 550 tons/yr combined for the two ovens. The total amount of wood or sawdust for emission units 05-11, 13-16, and 18 shall not exceed 1,300 tons/yr, on a combined basis.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.